

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 093144-9030 WO	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center; vertical-align: top;"> <b>FOR FURTHER ACTION</b> </td> <td style="width: 50%; text-align: right; vertical-align: top;">           see Form PCT/ISA/220            as well as, where applicable, item 5 below.         </td> </tr> </table>	<b>FOR FURTHER ACTION</b>	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
<b>FOR FURTHER ACTION</b>	see Form PCT/ISA/220 as well as, where applicable, item 5 below.		
International application No. PCT/US05/31248	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">           International filing date (day/month/year)            01 September 2005         </td> <td style="width: 50%; vertical-align: top;">           (Earliest) Priority Date (day/month/year)         </td> </tr> </table>	International filing date (day/month/year) 01 September 2005	(Earliest) Priority Date (day/month/year)
International filing date (day/month/year) 01 September 2005	(Earliest) Priority Date (day/month/year)		
Applicant VULCAN LEAD, INC.			

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the language, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (see Box No. II)

3. ☐ Unity of invention is lacking (see Box No. III)

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☒ the text is approved as submitted by the applicant
- ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 1
- ☒ as suggested by the applicant
- ☐ as selected by this Authority, because the applicant failed to suggest a figure
- ☐ as selected by this Authority, because this figure better characterizes the invention
- b. ☐ none of the figures is to be published with the abstract

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US05/31248

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - F42B 39/14 (2007.01)

USPC - 250/506.1, 515.1; 86/50

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) F42B 39/14 (2007.01)

USPC - 250/506.1, 515.1, 505.1; 86/50; 73/35.17; 220/560.01; 588/16; 102/303

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

USPTO WEST System (US, USPG-PUB, EPO, DERWENT), MicroPatent, IP.com, DialogPro

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3,820,435 A (ROGERS et al) 28 June 1974 (28.06.1974) entire document	1-42
Y	US 5,883,394 A (MUSSMAN) 16 March 1999 (16.03.1999) entire document	1-42
A	US 3,820,479 A (FYLLING) 28 June 1974 (28.06.1974) entire document	1-42
A	WO 2005/015119 A1 (BOSIK et al) 17 February 2005 (17.02.2005) entire document	1-42
A	US 2003/0209133 A1 (GREENFIELD et al) 13 November 2003 (13.11.2003) entire document	1-42
A	US 4,187,758 A (PETTY) 12 February 1980 (12.02.1980) entire document	1-42
A	US 4,027,601 A (HICKERSON) 07 June 1977 (07.06.1977) entire document	1-42

☐ Further documents are listed in the continuation of Box C.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

11 January 2007

Date of mailing of the international search report

22 FEB 2007

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents  
P.O. Box 1450, Alexandria, Virginia 22313-1450  
Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300  
PCT OSP: 571-272-1774

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To: Gayle A. Bush  
Michael Best & Friedrich LLP  
100 East Wisconsin Avenue, Suite 3300  
Milwaukee, WI 53202-4108

Michael, Best & Friedrich LLP  
**RECEIVED**

FEB 26 2007

Date of mailing  
(day/month/year)

22 FEB 2007

DOCKETING

Applicant's or agent's file reference

093144-9030 WO

MILWAUKEE FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US05/31248

International filing date (day/month/year)

01 September 2005

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - F42B 39/14 (2007.01)

USPC - 250/506.1, 515.1; 86/50

Applicant

VULCAN LEAD, INC.

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Due: 7-1-07

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA/US  
Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450, Alexandria, Virginia 22313-1450  
Facsimile No. 571-273-3201

Date of completion of this opinion

11 January 2007

Authorized officer:

Blaine Copenheaver

PCT Helpdesk: 571-272-4300  
PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2005)

## DOCKETED

Date: 2-27-07 CG

Also on ILH + JMC's docket

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US05/31248

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed  
☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper  
☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed  
☐ filed together with the international application in electronic form  
☐ furnished subsequently to this Authority for the purposes of search

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US05/31248

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	1-42	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-42	NO
Industrial applicability (IA)	Claims	1-42	YES
	Claims	None	NO

**2. Citations and explanations:**

Claims 1-42 lack(s) an inventive step under PCT Article 33(3) as being obvious over Rogers et al. (3,820,435) in view of Mussman (5,883,394).

Regarding claims 1, 11, 13, 14, 19, 20, 22, 23, 26, 29-31, 36, 39 and 40, Rogers et al. disclose a device containment vessel substantially as claimed as shown in Figures 1-4 and 8 to reduce the exposure to radioactive material (col.1, lines 16-31) shielded by a panel shaped to complement a contour of the vessel. However, Rogers et al does not disclose a plurality of panels with overlapping seams or the radiation material formed of lead and stainless steel. Mussman teaches, in the analogous field of radiation containment, a plurality of panels with overlapping seams (as shown in Fig.1) along with the radiation material formed of lead and stainless steel (col.8, lines 40-47) both as an alternative radiation shielding material and panel configuration. It would have been obvious to one skilled in the art at the time of invention to modify Rogers et al's panel to consist of a plurality of panels with overlapping seams along with the radiation material formed of lead and stainless steel, both as an alternative radiation shielding material and panel configuration taught by Mussman.

Regarding claims 2, 3, 15, 17, 27, 28, 41 and 42 wherein the panels are arranged to surround an exterior surface of the vessel and wherein the panels are positioned adjacent an interior surface of the vessel (Rogers et al., top of Fig.3, "Z").

Regarding claims 4, 12, 21, 32 and 37, further comprising an end cap formed of radiation shielding material, the end cap positioned at one end of the plurality of panels to cap an opening formed at the end of the plurality of panels and further comprising a door, the door shield coupled to an exterior surface of the door (Rogers et al., Fig.2, "4").

Regarding claims 5-7, 16, 24 and 33-35, further comprising a frame wherein the vessel is at least partially disposed within the frame and the panels are coupled to the frame and wherein the frame is mounted to the vessel and wherein the vessel is supported by a base and the frame is mounted to the base (Rogers et al., Fig.1).

In regard to claims 8, 10, 18, 25 and 38, and further comprising a supplemental shield formed of a radiation shielding material and selectively coupled to the frame, the supplemental shield being positioned relative to the plurality of panels wherein the plurality of panels are positioned between the supplemental shield and the vessel (Rogers et al, Figs.1-2, "24").

Regarding claim 9, the use of lead wool blanket is disclosed in Mussman (col.2, lines 12-15) as an obvious shield material. It would have been obvious to one skilled in the art at the time of invention to modify Rogers et al's supplemental shield to include a lead wool blanket, as taught by Mussman, to provide a cost effective, readily available material for the supplemental shield.

Claims 1-42 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.